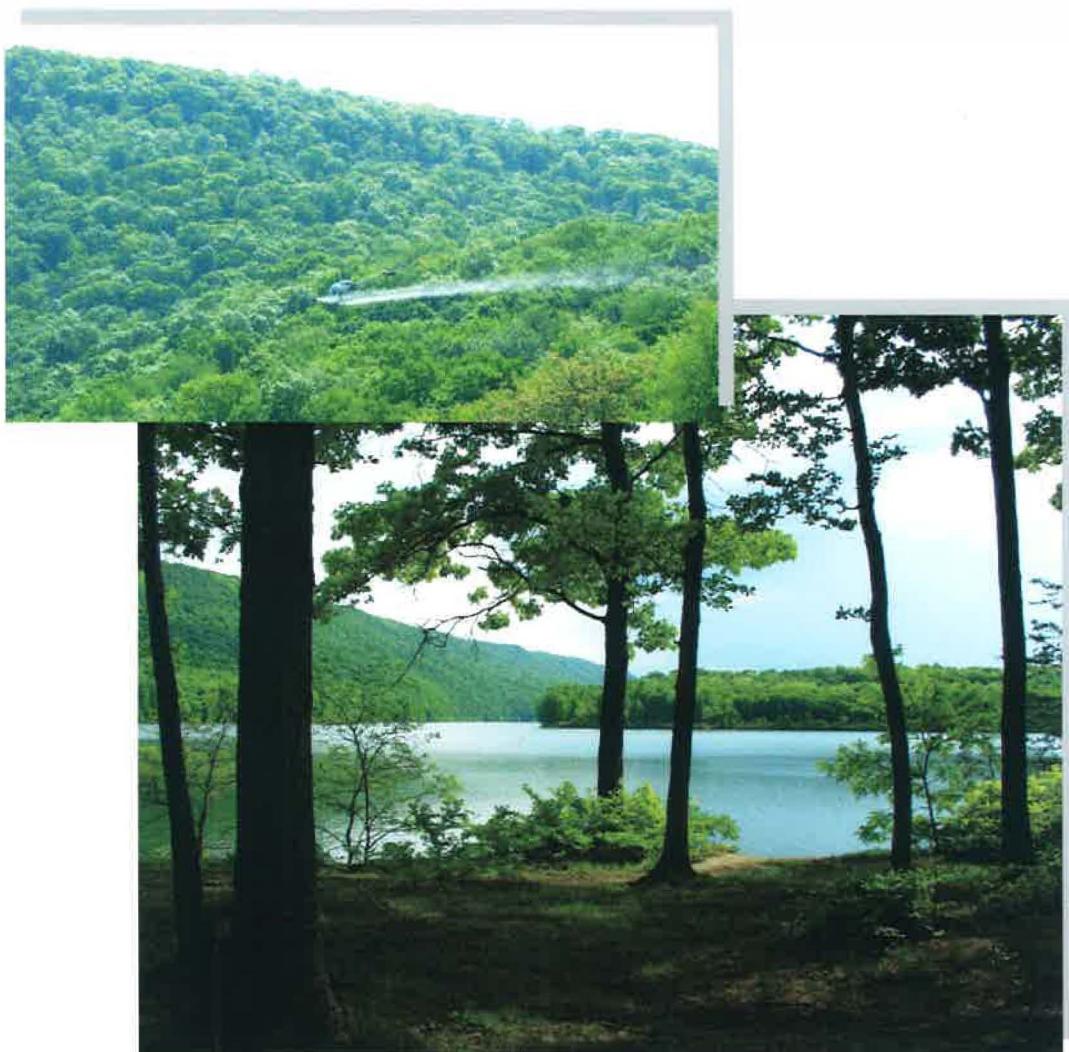


2001 GYPSY MOTH SUPPRESSION PROJECT SUMMARY

at

RAYSTOWN LAKE



Report by:

Rodney L. Whiteman, Forester
Forest Health Protection

Maps by:
Ann Steketee, GIS Specialist
Information Management & Analysis

Graphics by:
Karen Felton, Biologist
Forest Health Protection

USDA Forest Service
Morgantown, WV

Between May 8 and May 15, 2001, approximately 6,317 acres at Raystown Lake were aerially treated to reduce gypsy moth populations and to prevent defoliation.

The biological insecticide *Bacillus thuringiensis* variety *kurstaki* (*B.t.k.*) was used on all 6, 317 acres. Four formulations of *B.t.k.* were used on the project. Foray® 48F was applied undiluted at the rate of 96 ounces per acre per application on 3,843 acres. A single application was applied on 926 acres and a double application was applied on 2,917 acres. Foray® 76B was applied undiluted at the rate of 64 ounces per acre per application on 2325 acres. A single application was applied on 1,107 acres and a double application on 1,218.5 acres. Two experimental formulations were also used on very small areas of the project. A double application of VBC-60013, a low volume aqueous concentrate, was applied on 89 acres while a double application of VBC-60004, a dry wettable granule, was applied on 60 acres.

Two rotary-winged aircraft, both equipped with a Differential Global Positioning System (DGPS) were used to apply the insecticide.

This report documents the spray equipment, insecticides, meteorological conditions, foliage and larval development, and spray coverage for the project. Treatment efficacy will be reported once defoliation surveys are conducted in June and egg mass surveys are completed this fall.

Aircraft and Spray Equipment

Contractor:	Helicopter Applicators, Inc.	
Aircraft:	Bell 47 Soloy	
FAA Number:	N652HA	
Pilot:	Roger Johnsonbaugh	
DGPS Brand:	AG-NAV	
Spray System:	Simplex	
Nozzle Type:	AU7000 Micronairs	
Number of Nozzles:	6	
Blade Angle:	35°	
VRU Setting:	9	
Application Rates:	96 ounces/acre	64 ounces/acre
Boom Pressure:	16 psi	17 psi
Air Speed:	70 mph	70 mph
Swath Width:	90 feet	90 feet
Flow Rate:	9.54 gpm (calculated)	6.36 gpm (calculated)
	9.38 gpm (actual)	6.10 gpm (actual)

Aircraft and Spray Equipment

Contractor:	Helicopter Applicators, Inc.		
Aircraft:	Bell 47 Soloy		
FAA Number:	N122CD		
Pilot:	Brian Redding		
DGPS Brand:	AG-NAV		
Spray System:	Simplex		
Nozzle Type:	AU 7000 Micronairs		
Number of Nozzles:	6		
Blade Angle:	35°		
Spray Disk Orifice:	.110"	.110"	
Application Rate:	96 ounces/acre	64 ounces/acre	
Boom Pressure:	30 psi	18 psi	
Air Speed:	60 mph	60 mph	
Swath Width:	90 feet	90 feet	
Flow Rate:	8.18 gpm (calculated)	5.45 gpm (calculated)	
	7.90 gpm (actual)	5.44 gpm (actual)	

Meteorological Conditions

<u>Date</u>	<u>Time</u>	<u>Temperature</u>	<u>RH</u>	<u>Wind Speed</u>	<u>Wind Direction</u>
		<u>Range</u>	<u>Range</u>	<u>Range</u>	
5/8	0555--1100	41--60° F	48--93%	1-7 mph	W
5/9	0820--1250	61--74° F	43--81%	0-8 mph	E, SE
5/9	1920--2019	64--69° F	42--43%	0-4 mph	W
5/10	0605--1105	49--74° F	49--99%	0-2 mph	N
5/10	1942--2005	70--71° F	43--46%	0-1 mph	W
5/11	0610--1020	49--76° F	44--76%	1-2 mph	SW
5/14	0555--0956	42--52° F	43--91%	0-6 mph	S
5/14	1845--1945	55--56° F	55--68%	0-1 mph	N
5/15	0815--0945	50--58° F	61--72%	1-2 mph	N

A detailed report of weather conditions is enclosed in Appendix A.

Foliage and Larval Development

<u>Date</u>	<u>Foliage Development</u>		<u>Larval Development</u>
5/8	red oak	90%	47 % first instar
	black oak	90%	53% second instar
	chestnut oak	90%	
	white oak	50%	

<u>Date</u>	<u>Foliage Development</u>		<u>Larval Development</u>
5/9	red oak	100%	20% first instar
	black oak	100%	80% second instar
	chestnut oak	100%	
	white oak	55%	
5/10	red oak	100%	17% first instar
	black oak	100%	82% second instar
	chestnut oak	100%	1% third instar
	white oak	65%	
5/11	red oak	100%	15% first instar
	black oak	100%	80% second instar
	chestnut oak	100%	5% third instar
	white oak	70%	
5/14	red oak	100%	4% first instar
	black oak	100%	86% second instar
	chestnut oak	100%	10% third instar
	white oak	75%	

Spray Coverage

Based on observations made by personnel in the treatment blocks and by viewing the AG-NAV printouts (Appendix B), spray coverage was good. In spite of the steep and rugged terrain, skips in most of the spray blocks were minimal to non-existent and very little area outside of the treatment blocks was sprayed.

Narrative

This suppression project was divided into fourteen treatment areas (Figure 1). The project was staged from two helispots. One helispot was located in the field southwest of the Visitors Center while the other helispot was located in the upper parking lot of Tatman Run (Figure 1).

Treatment commenced on the morning of May 8 at 0551 and was terminated at 1145 due to increasing winds and low relative humidity. Blocks 721, 724 and 422 were sprayed along with approximately 534 acres in block 421. A total of 2, 171 acres was treated for the day. No treatment was planned for the evening due to a 60% chance of rain starting in the late evening/early morning of May 9. As predicted, rain did fall in the Raystown Lake Area but it was very light with only .1" to .15" of rainfall being measured at Huntingdon and Altoona, respectively.

After the fog burned off on the morning of May 9, treatment resumed at 0814 and was terminated at 1303 due to low humidity and high temperatures. Treatment on that day also

included an evening spray session that started at 1929. Blocks 412, 722, 723 and the remainder of 421 were sprayed along with approximately 783 acres in block 423. A total of 2,066 acres was treated for the day.

Treatment continued on the morning of May 10 at 0550. The remainder of block 423 was sprayed along with blocks 715, 712, 713, 411, 711, 716, 714 and 715. The spray session was terminated at 1140 due to low humidity and increasing temperatures. The first application in all the double application blocks was complete as well as application in all the single application blocks. Since the development of larvae was so advanced (17% first instar, 82% second instar and 1% third instar) it was decided not to wait the targeted 4-6 days between treatments in the double application blocks. The second application would begin during the next favorable spray window which turned out to be that evening when approximately 227 acres were treated in block 422. A total of approximately 2,284.4 acres was treated for the day.

Treatment resumed on the morning of May 11 at 0541. The remainder of block 422 was sprayed along with approximately 890 acres in block 721 and 358 acres in block 422. Also, a 10 acre area along Tatman Run in block 713 was also treated. The rest of this block was treated on May 10 but the spray aircraft ran out of B.t.k. while treating, and weather conditions were not favorable to finish this block when the spray aircraft landed for more insecticide.

The spray session was terminated at 1017 due to low humidity and high temperature. Rain was forecasted for the evening and early the next day so the evening spray session was cancelled. A total of approximately 1,646.7 acres was treated for the day.

Rain was forecasted for the day on May 12 so no spraying was conducted. However, less than .10 inches of rain fell at Raystown Lake for that day.

High winds (15-30 mph) prevented any spraying on May 13.

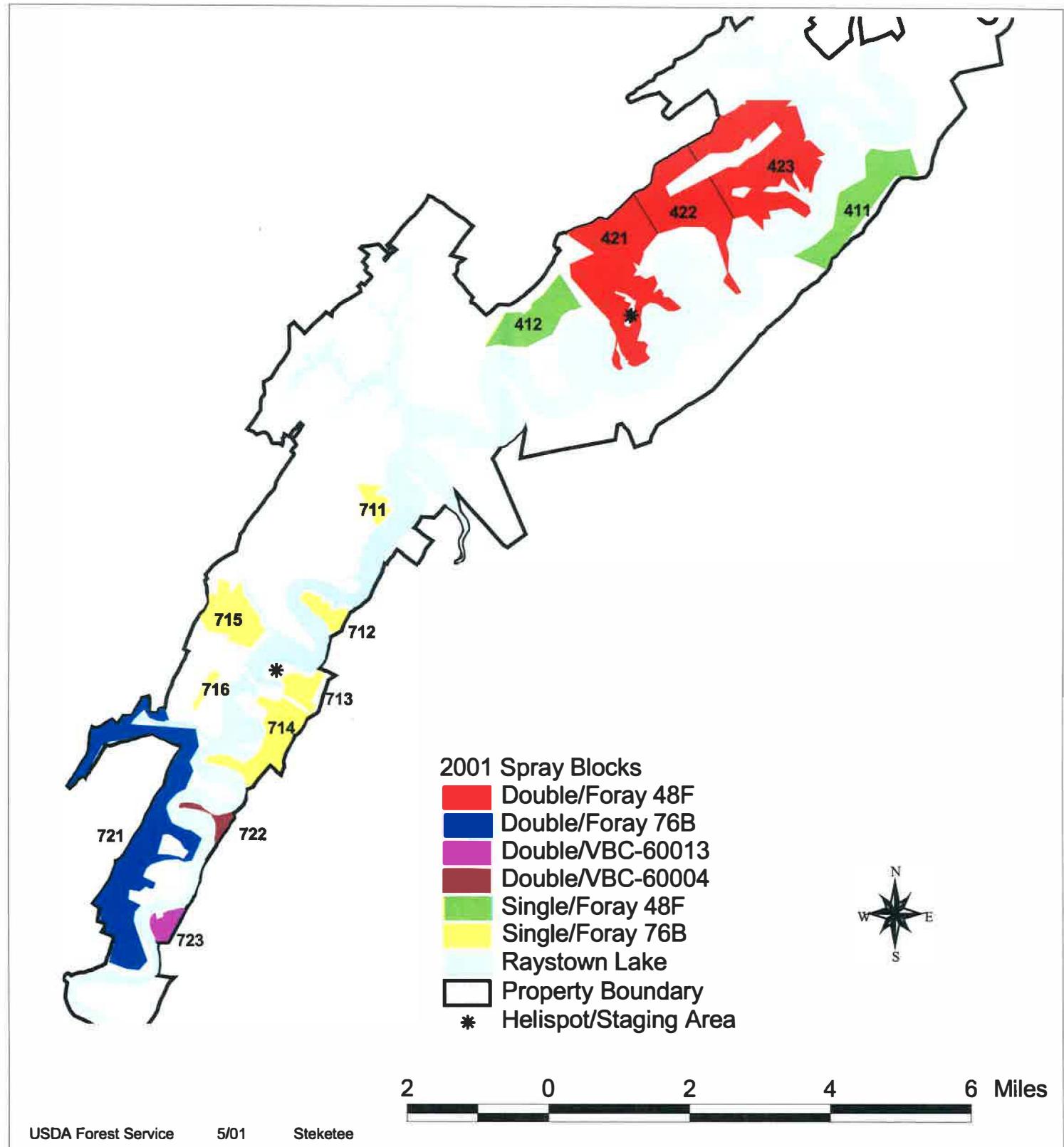
Treatment resumed on May 14 with both a morning and an evening spray session. The morning spray session started at 0545 and was terminated at 1003 due to low humidity and increasing winds. The evening spray session started at 1843 and was terminated at 2030 due to darkness. The remainder of block 421 was sprayed along with blocks 423 and 723. A total of approximately 2,038 acres was treated for the day.

The spray session on May 15 was delayed until 0817 due to fog. Blocks 722, 724 and the remainder of 721 were sprayed. A total of approximately 396 acres was treated for the day. The project was now complete. The daily sortee reports are enclosed in Appendix C.

A grand total of approximately 10,602 acres was sprayed at Raystown Lake in 2001. Both the applications went well with no accidents or incidents. Treatment timing based on larval and foliage development was good. Based on the development, the project could have started a couple of days earlier than May 8.

For the most part, no problems were encountered with the spray equipment, ground support equipment and/or personnel provided by the contractor, Helicopter Applicators, Inc. An intermittent problem was encountered with the GPS unit on N122CD where it would not receive

Figure 1. 2001 Gypsy moth treatment blocks at Raystown Lake.



any signals from the satellites. This problem was encountered on the evening of May 9 and the morning of May 14 and caused the loss of approximately 3 spray hours. Not including these 3 hours, the production rate of this project was 463 acres per hour.

As stated previously, treatment efficacy will be evaluated through a defoliation survey conducted in June and an egg mass survey this fall. The suppression project will be considered successful if the goals of preventing noticeable defoliation on less than 20 percent of the treatment area and reducing residual gypsy moth populations below the treatment threshold on at least 80 percent of the treatment area.

APPENDIX A

METEOROLOGICAL CONDITIONS

DURING TREATMENT

Meteorological Conditions During Treatment

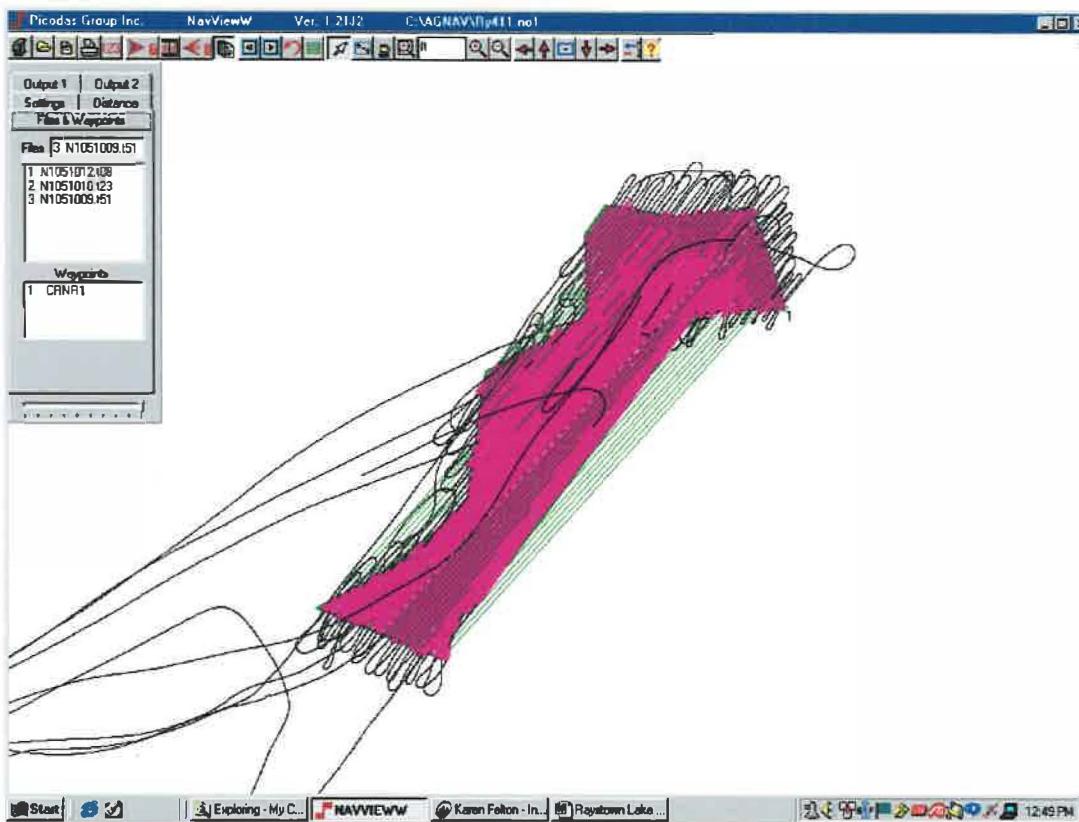
Date	Time	Temperature	RH	Wind Speed (mph)	Wind Direction
5/8	0555	41° F	93%	1-3	W
5/8	0750	50° F	77%	2-4	W
5/8	0910	54° F	57%	2-5	W
5/8	1000	59° F	56%	3-5	W
5/8	1030	59° F	48%	3-6	W
5/8	1100	60° F	48%	4-7	W
5/9	0820	61° F	81%	0-2	E
5/9	0930	63° F	68%	0-2	SE
5/9	1045	69° F	63%	0-3	SE
5/9	1120	65° F	55%	0-3	SE
5/9	1238	72° F	45%	2-3	SE
5/9	1250	43° F	43%	3-8	SE
5/9	1920	69° F	42%	2-4	W
5/9	2019	64° F	43%	0	--
5/10	0605	49° F	99%	0	--
5/10	0745	56° F	72%	0	--
5/10	0905	63° F	60%	1-2	N
5/10	0945	64° F	53%	1-2	N
5/10	1005	67° F	53%	0	--
5/10	1105	74° F	49%	0	--
5/10	1942	71° F	43%	1	W
5/10	2005	70° F	46%	0	--
5/11	0610	49° F	76%	1-2	SW
5/11	0800	58° F	63%	1-2	SW
5/11	0900	64° F	54%	1-2	SW
5/11	0945	68° F	54%	1-2	SW
5/11	1020	76° F	44%	1-2	SW
5/14	0555	42° F	91%	0	--
5/14	0820	48° F	71%	0	--
5/14	0920	52° F	82%	1-2	S
5/14	0956	52° F	43%	3-6	S
5/14	1845	56° F	55%	1	N
5/14	1945	55° F	68%	0	N
5/15	0815	80° F	72%	1-2	N
5/15	0945	58° F	61%	1-2	N

APPENDIX B

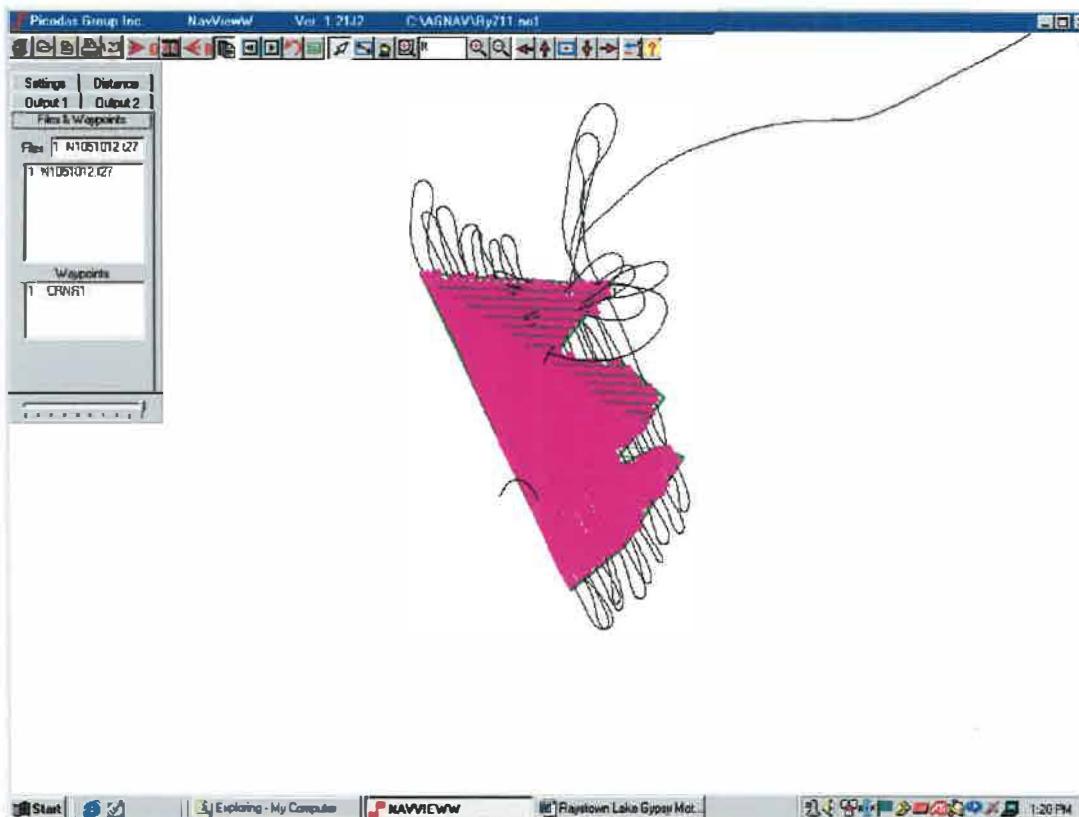
AG-NAV PRINTOUTS

Note: AG-NAV printouts for block 412 was not presented in this appendix because the treatment file for this block was not on the downloaded treatment disks. However, treatment in this block was verified by Forest Service personnel located in or adjacent to the block during treatment.

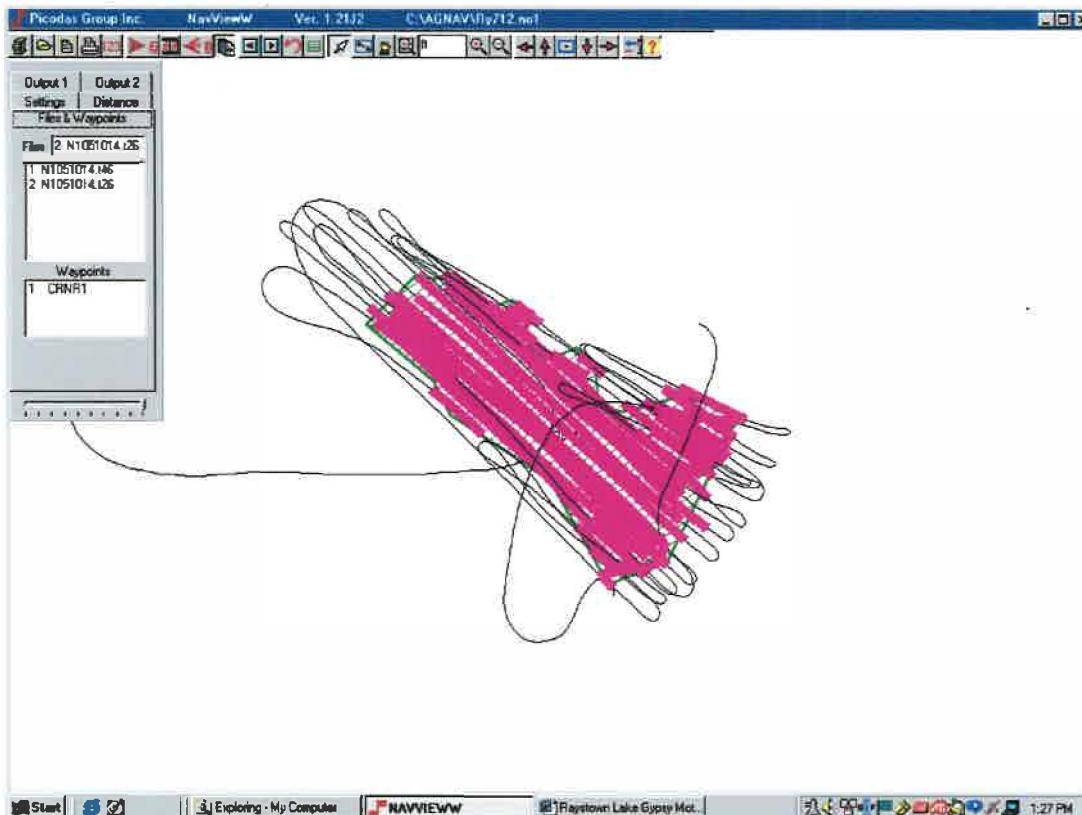
Raystown Lake Gypsy Moth Suppression Project
Block 411 – single application – May 10, 2001.



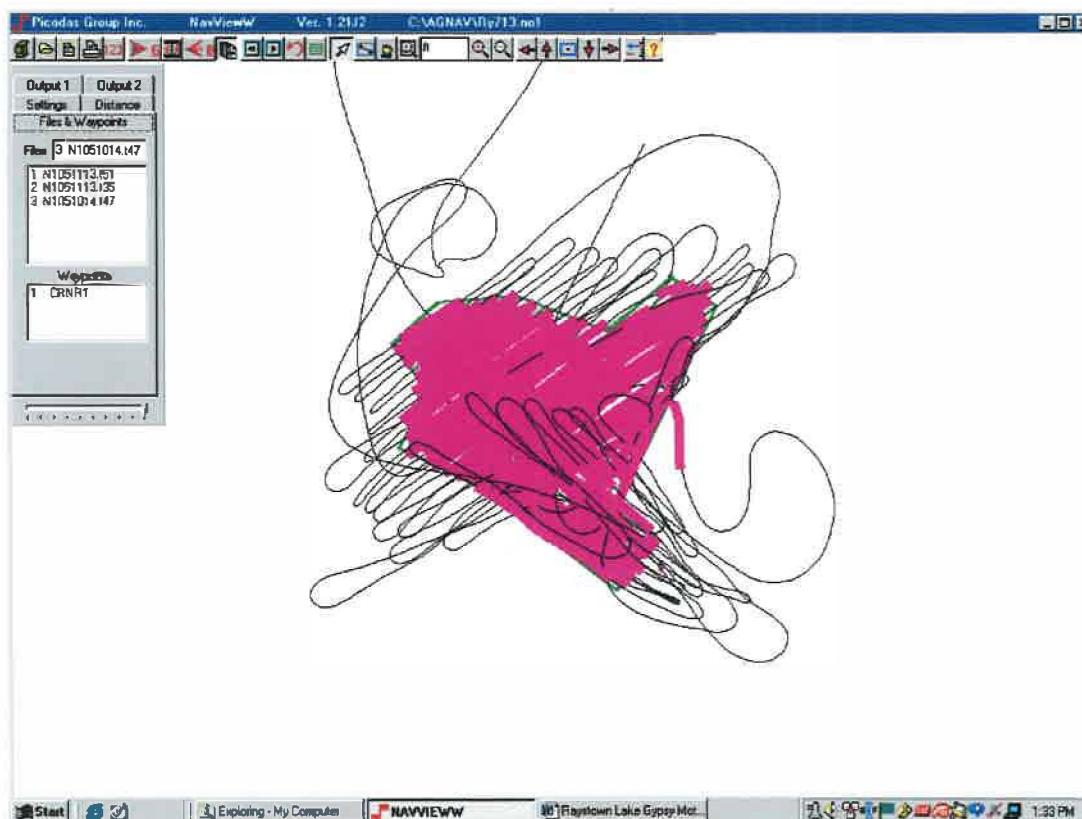
Raystown Lake Gypsy Moth Suppression Project
Block 711 – single application – May 10, 2001.



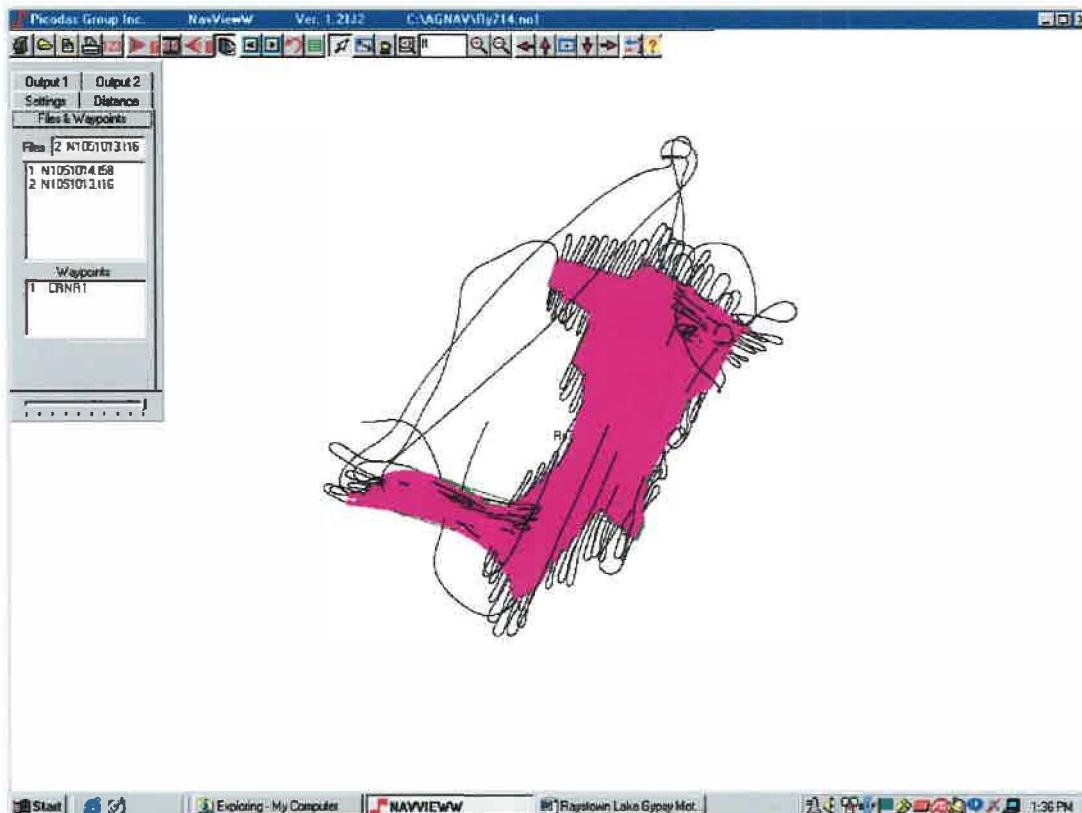
Raystown Lake Gypsy Moth Suppression Project
Block 712 – single application – May 10, 2001.



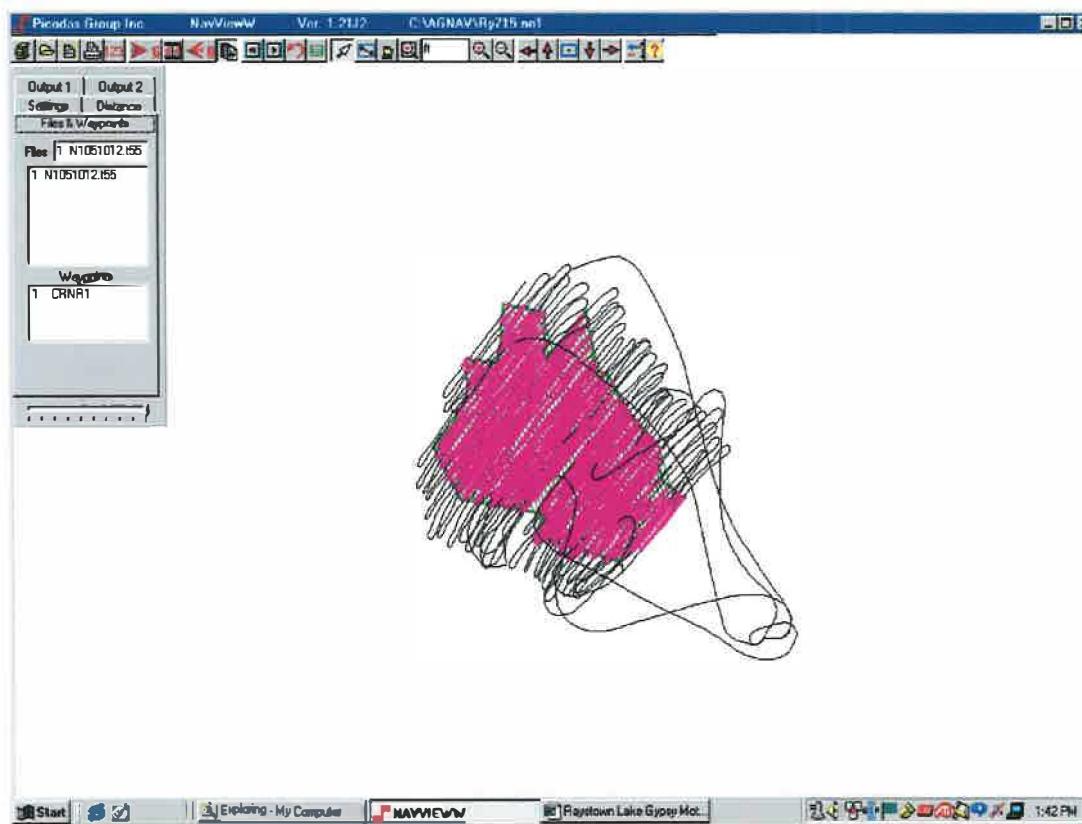
Raystown Lake Gypsy Moth Suppression Project
Block 713 – single application – May 10 & 11, 2001.



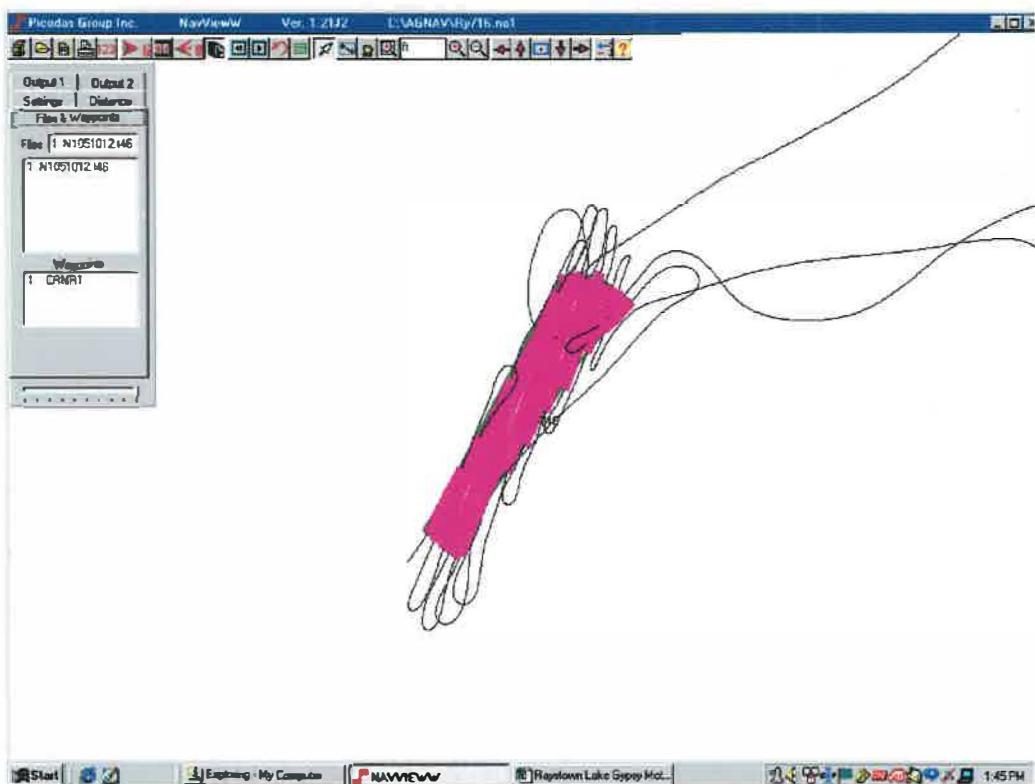
Raystown Lake Gypsy Moth Suppression Project
Block 714 – single application – May 10, 2001.



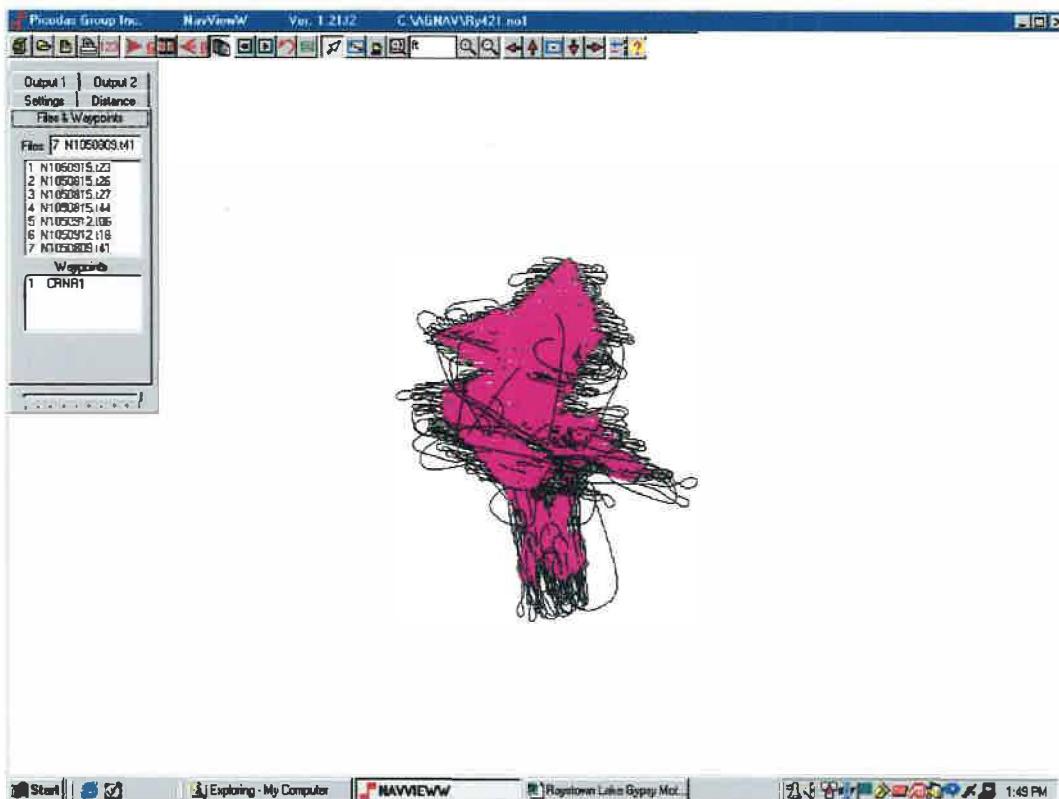
Raystown Lake Gypsy Moth Suppression Project
Block 715 – single application – May 10, 2001.



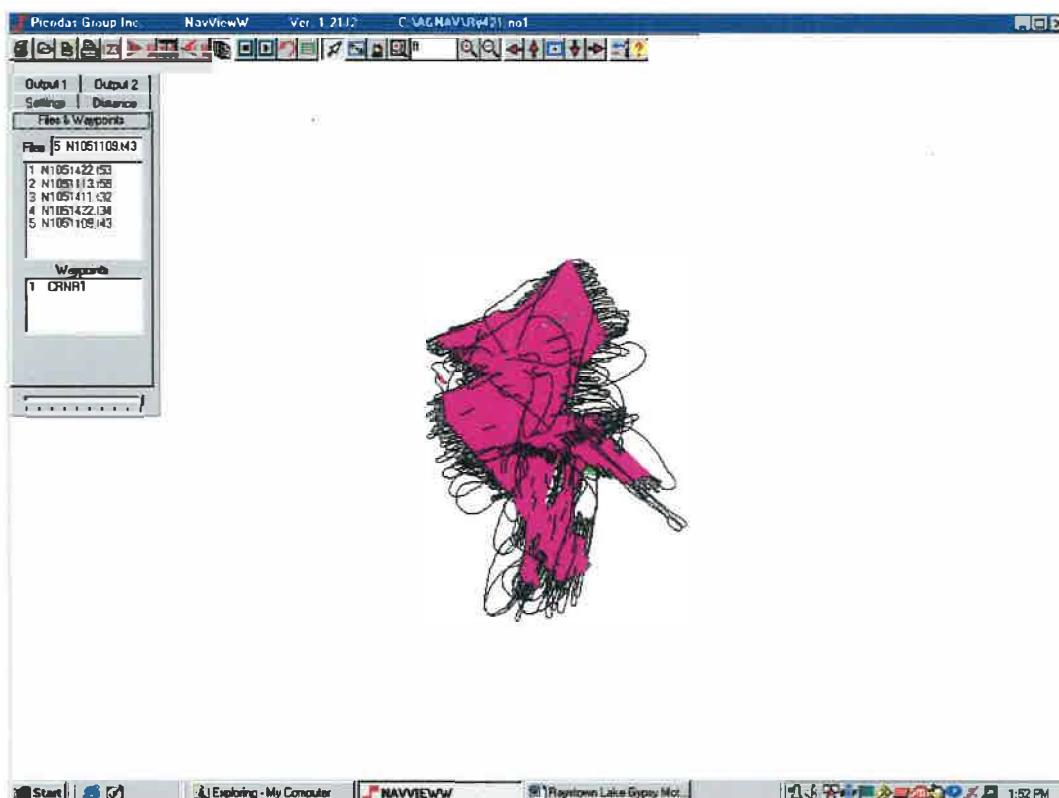
Raystown Lake Gypsy Moth Suppression Project
Block 716 – single application – May 10, 2001.



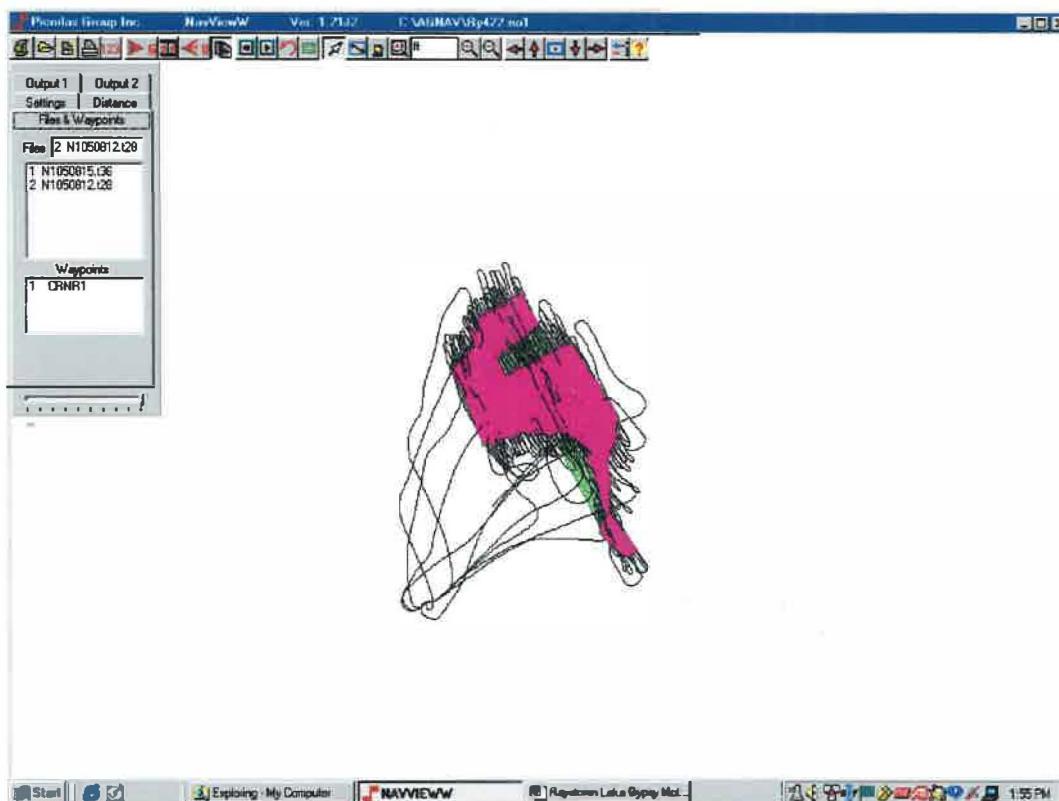
Raystown Lake Gypsy Moth Suppression Project
Block 421 – first application – May 8 & 9, 2001.



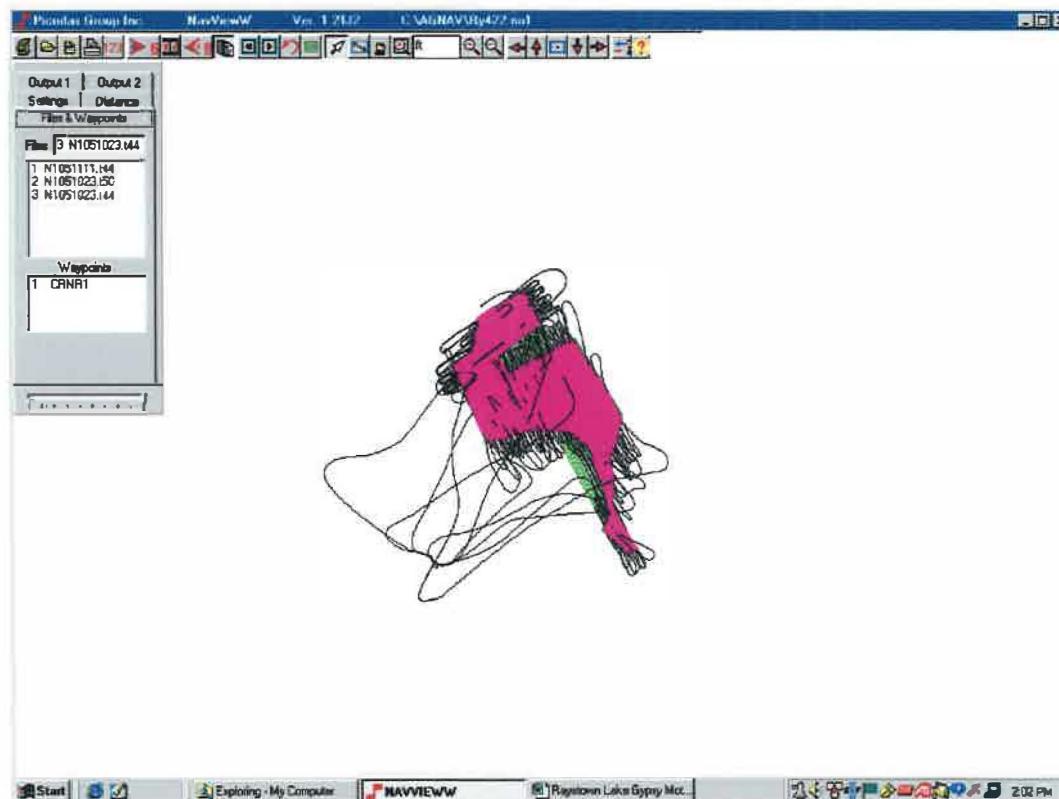
Raystown Lake Gypsy Moth Suppression Project
Block 421 – second application – May 11 & 14, 2001.



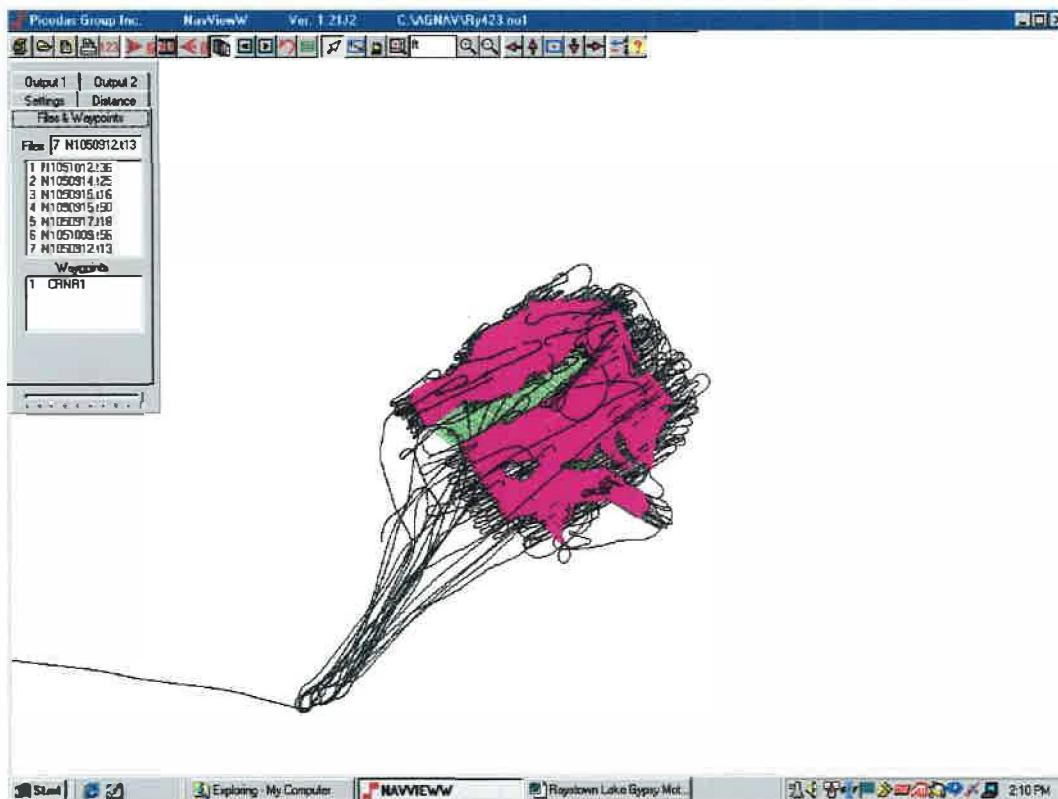
Raystown Lake Gypsy Moth Suppression Project
Block 422 – first application – May 8, 2001.



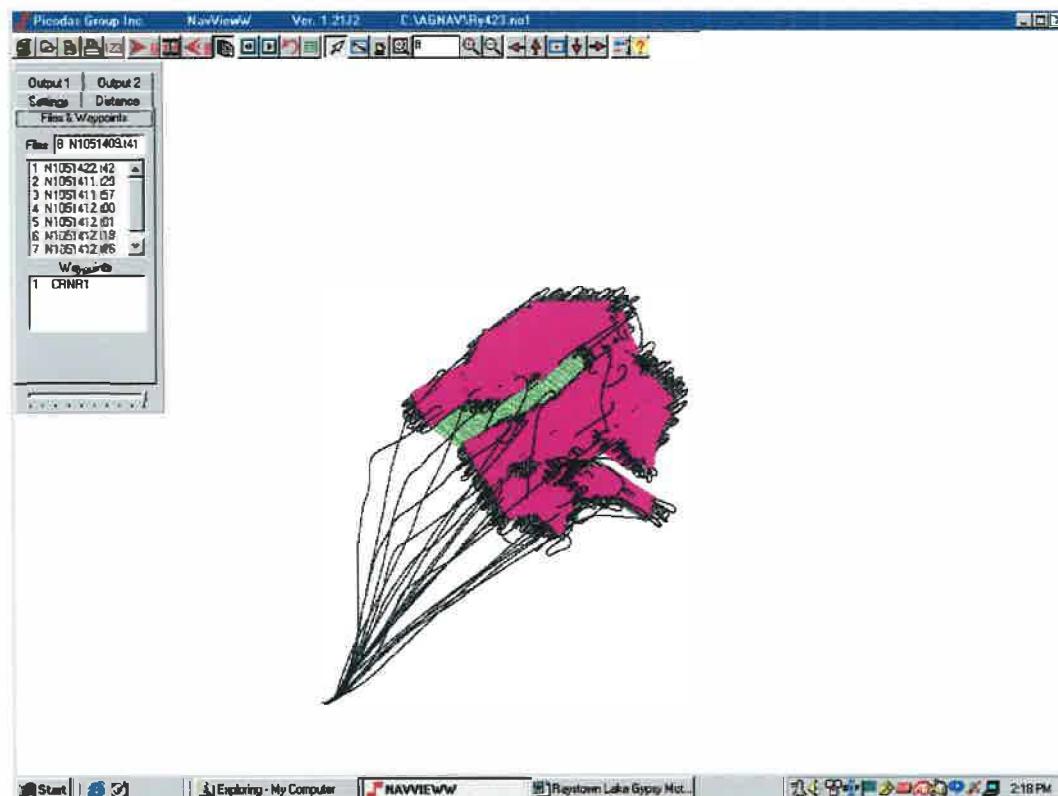
Raystown Lake Gypsy Moth Suppression Project
Block 422 – second application – May 10 & 11, 2001.



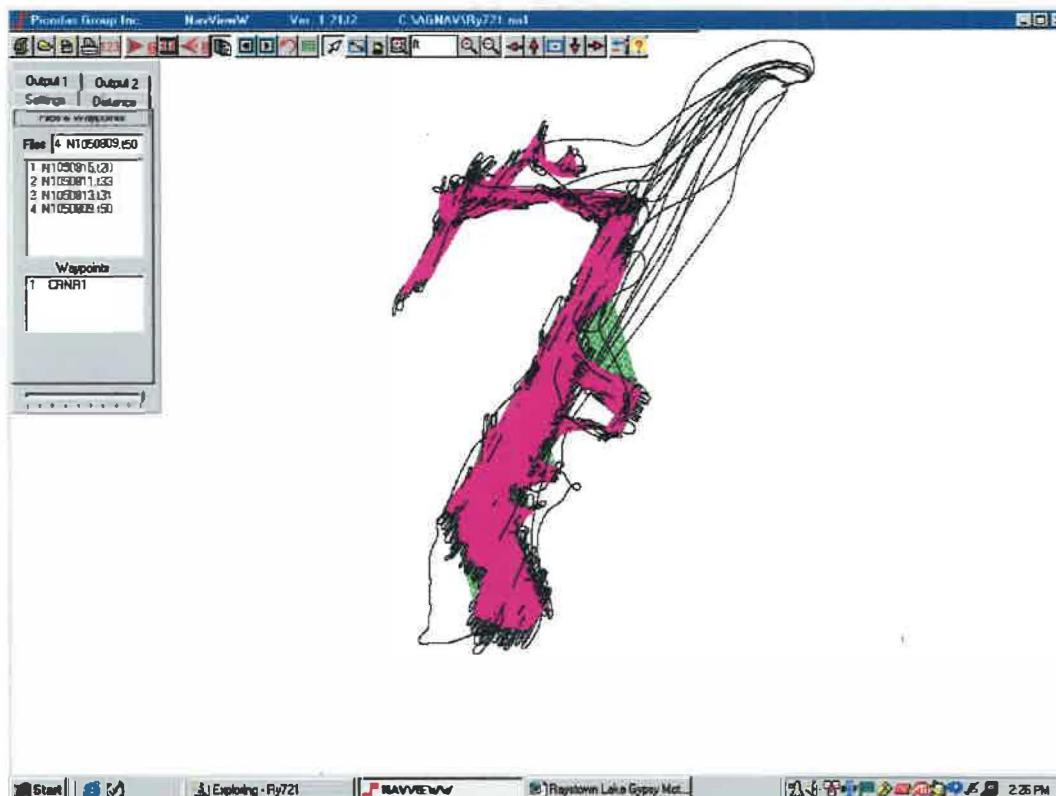
Raystown Lake Gypsy Moth Suppression Project
Block 423 – first application – May 9 & 10, 2001.



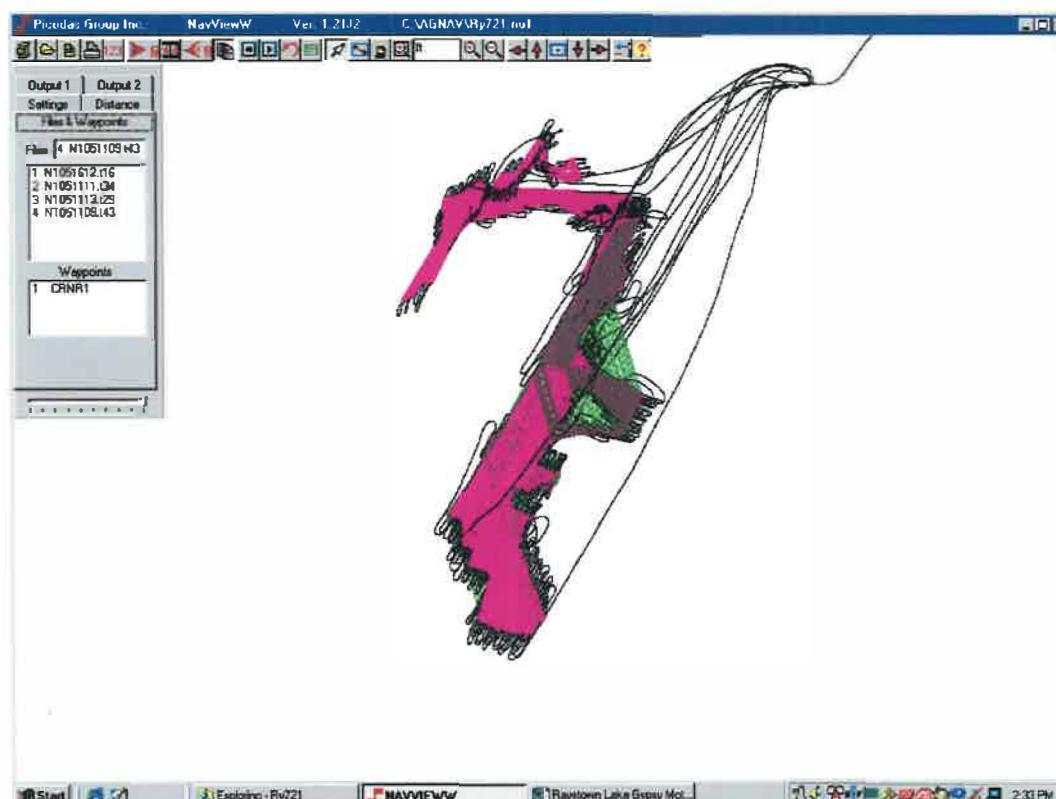
Raystown Lake Gypsy Moth Suppression Project
Block 423 – second application – May 14, 2001.



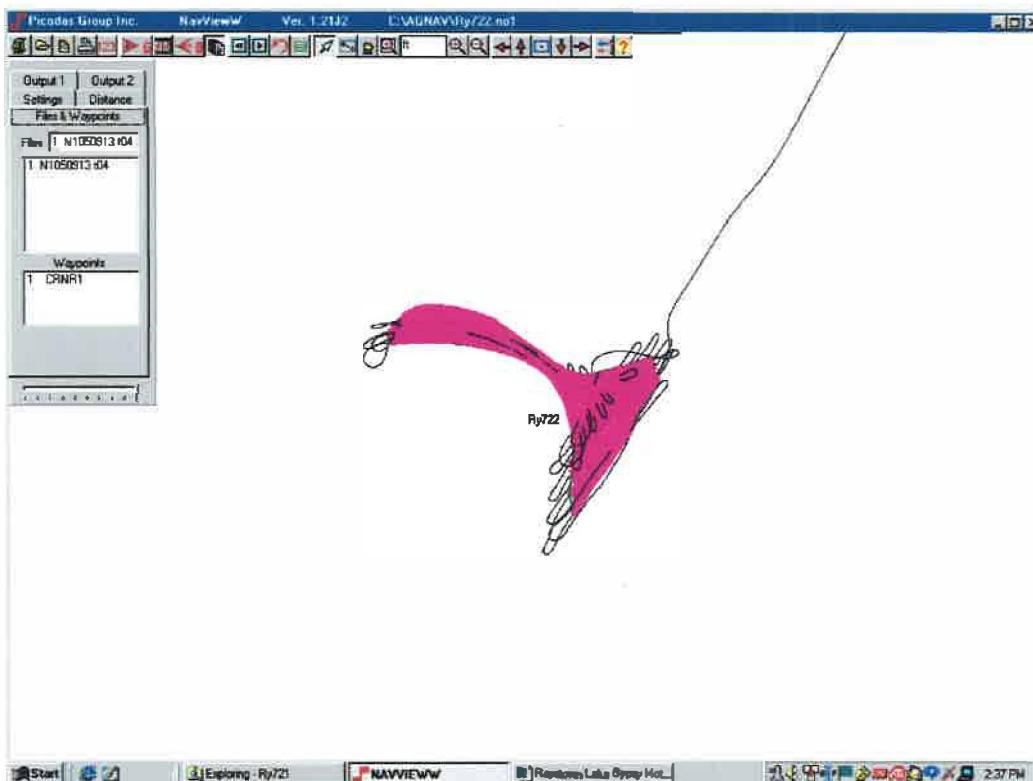
Raystown Lake Gypsy Moth Suppression Project
Block 721 – first application – May 8, 2001.



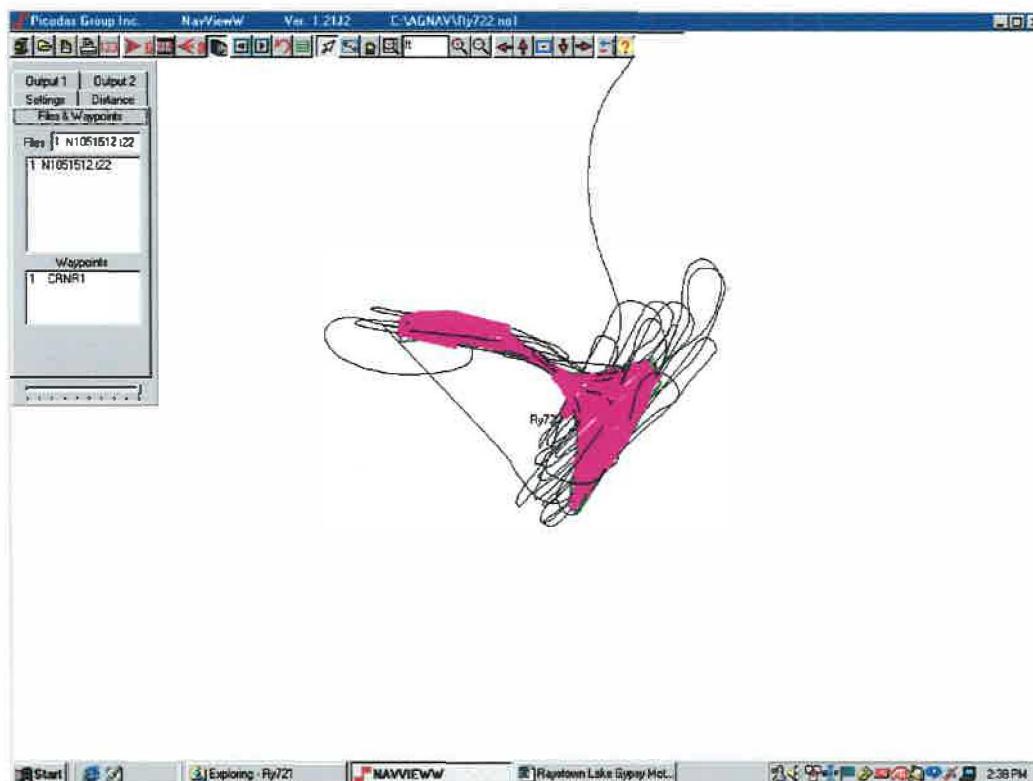
Raystown Lake Gypsy Moth Suppression Project
Block 721 – second application – May 11 & 15, 2001.



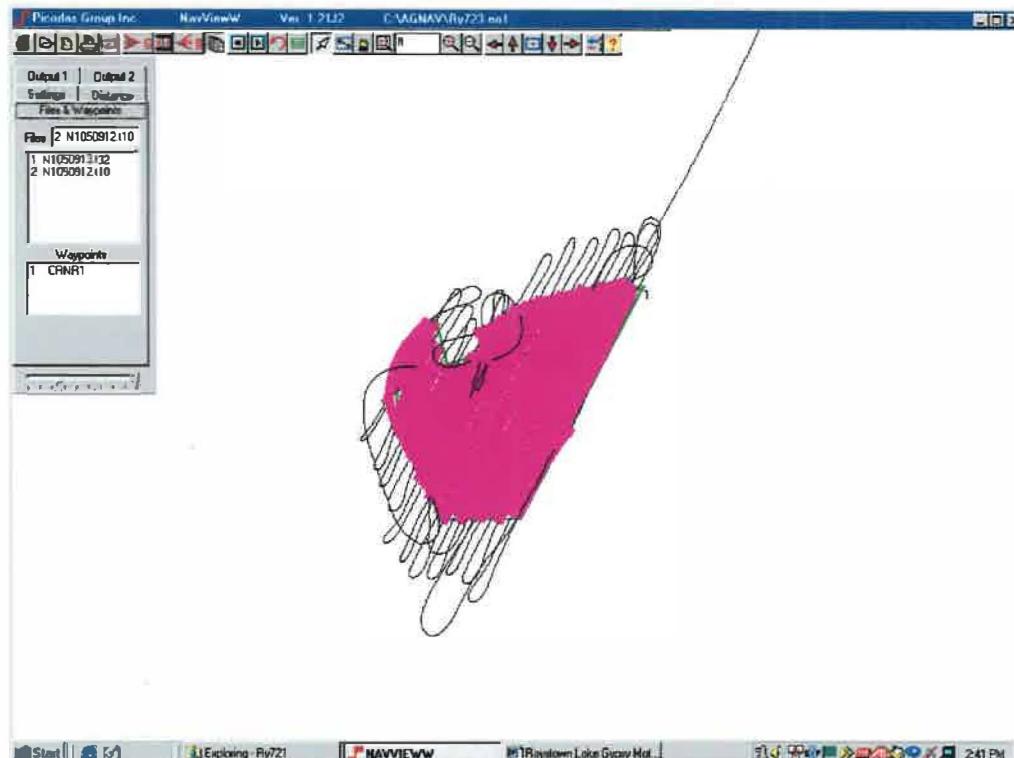
**Raystown Lake Gypsy Moth Suppression Project
Block 722 – first application – May 9, 2001.**



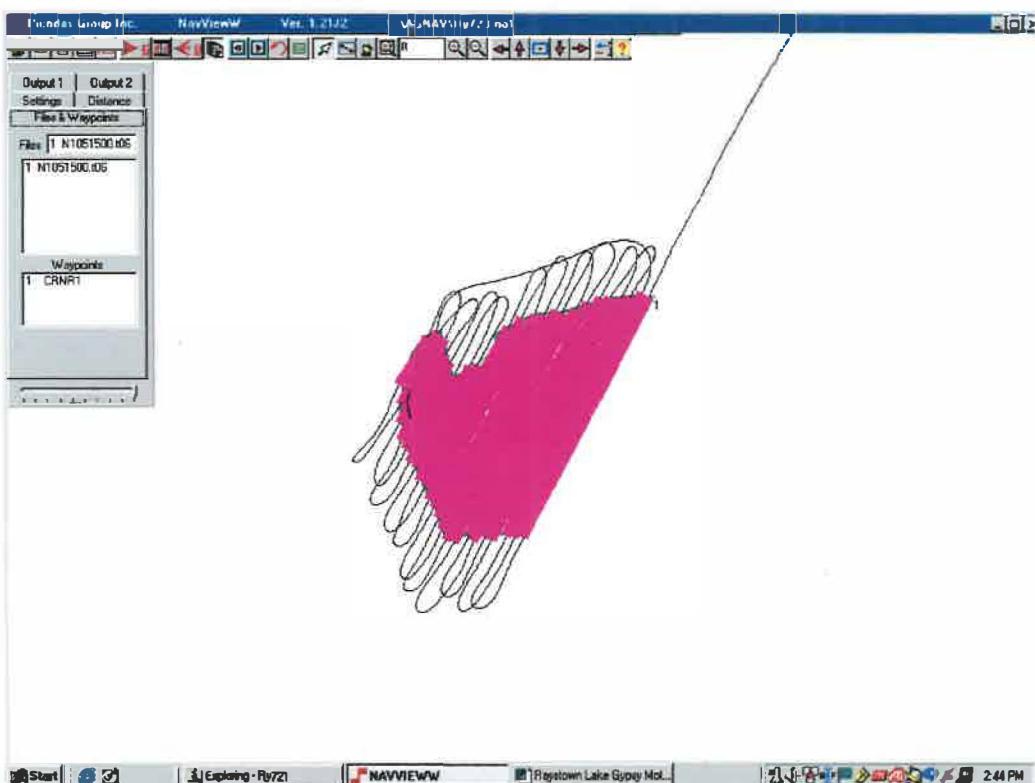
**Raystown Lake Gypsy Moth Suppression Project
Block 722 – second application – May 15, 2001.**



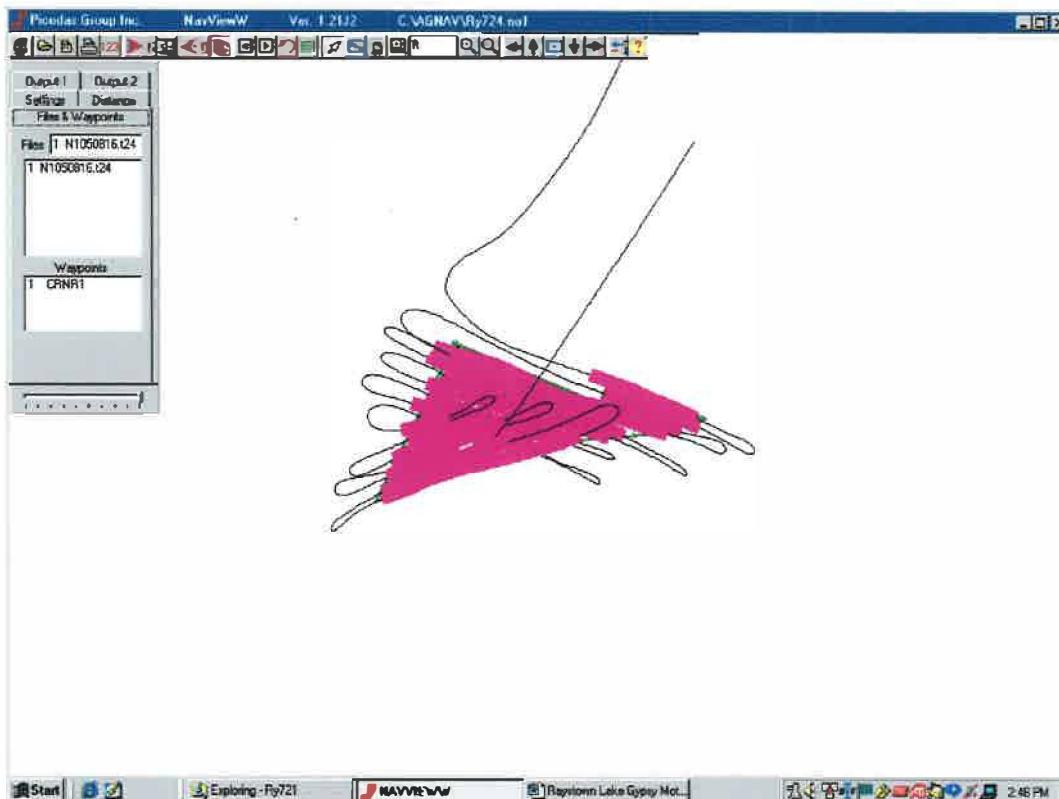
Raystown Lake Gypsy Moth Suppression Project
Block 723 – first application – May 9, 2001.



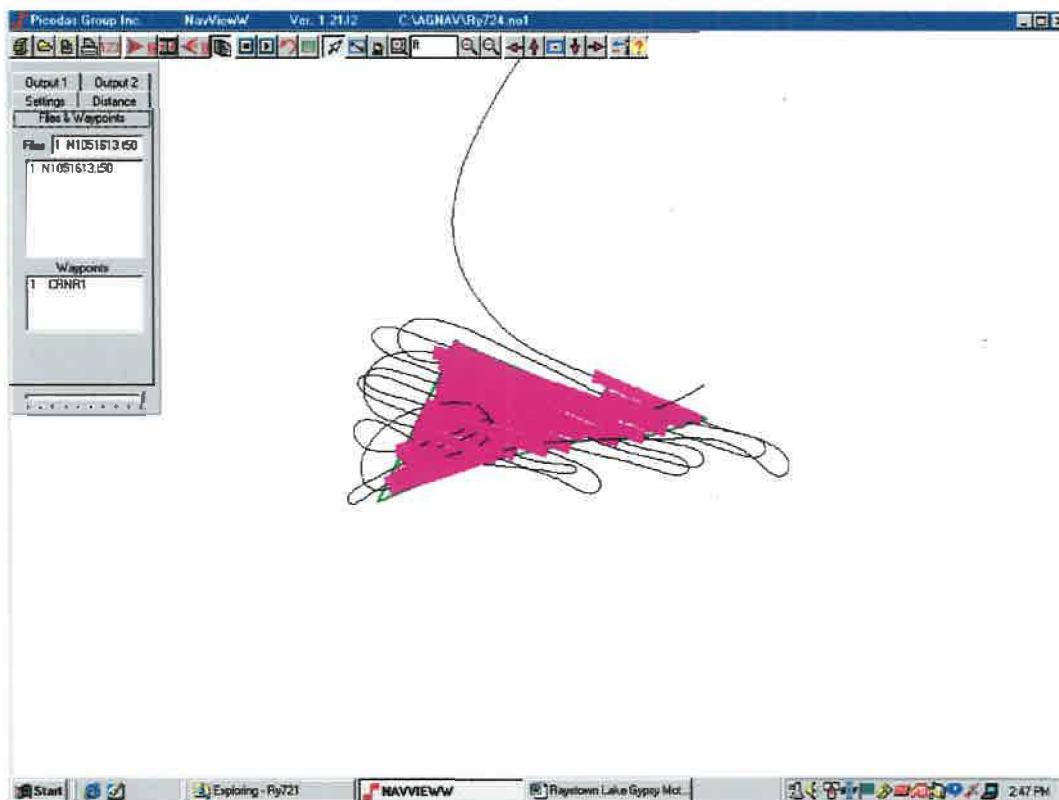
Raystown Lake Gypsy Moth Suppression Project
Block 723 – second application – May 14, 2001.



**Raystown Lake Gypsy Moth Suppression Project
Block 724 – first application – May 8, 2001.**



**Raystown Lake Gypsy Moth Suppression Project
Block 724 – second application – May 15, 2001.**



APPENDIX C

DAILY SORTIE REPORTS

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: May 8, 2001
Aircraft ID: N122ACD

Location: Raystown Lake
Pilot: Brian Redding

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Shut down due weather, low humidity, variable winds.
Foray 48F

$$\text{Total gallons} = 720$$

$$\text{Total acres} = 960$$

SIGNATURES

Project Coordinator:

Contractors Representative:

~~Franklin M. D.~~

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman

Date: 5/8/01

Aircraft ID: N652HA

Location: Raystown Lake

Pilot: Roger Johnson b/w

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	90	0551	0645	180	721
2	90	0655	0725	180	721
3	90	0730	0806	180	721
4	90	0815	0840	180	721
5	90	0846	0924	180	721
6	90	0932	1015	180	721
7	60.5	1021	1115	131	721, 724

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

A total of 1200 acres treated with this spray

All loads Foroy 76 B

SIGNATURES

Project Coordinator: Rodney L. W. Winters

Contractors Representative:

Björn

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman

Date: 5/9/01

Aircraft ID: N122CD

Location: Raystown Lake

Pilot: Bryan Redding

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Eight gallons of lead Hg needed to finish block H 421

Shut down at 1303 due to high temp, low RH and gusty winds.

Treated 1049 acres for the day with the ship

Did not spray any material with load #11
due to malfunctioning C6's unit

SIGNATURES

Project Coordinator: Patricia

All looks ~~Fancy~~ 48 F

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman

Date: 5/9/01

Aircraft ID: N652HA

Location: Raystown Lake

Pilot: Roger Johnsonbaugh

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Shut down at 1248 due to high temp, low RH and gusty winds

Treated 1017 acres with this ship for fire day

Locs 1, 2, 5, 6, 7, 8, 9 and 10 Foray 48F

Loads 2 and 3 new formulations of Bt. Insecticide provided by

SIGNATURES

Project Coordinator: Ronald

Insecticide company

Contractors Representative:

Bjørn

DAILY SORTIE REPORT

Project coordinator: Rod Whitman

Date: 5/10/00

Aircraft ID: N122CA

Location: Raystown Lake

Pilot: Brian Redding

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Locs 1-4 Foray 48 F

Load #7 8 gallons went to finish block 715

Locs 5-8 Foray 76B
and 9

Treated a total of 1106.4 acres for the day with this aircraft.

SIGNATURES

Project Coordinator: *Red Nichols*

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whittemore

Date: 5/10/01

Aircraft ID: N6521TA

Location: Raystown Lake
Pilot: Rodger Johnson boush

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Locs i-5 Furay 48 F

10 gallons of load 7 went into block 7 till

Loads 6-9 Foray 7CB
and 10

Treated a total of 1178 acres for the day with
this ship.

SIGNATURES

Project Coordinator: *Paul M. S.*

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman

Date: May 11, 2001

Aircraft ID: N122CD

Location: Rangstolow Lake
Pilot: Brian Redding

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Shut down due to low humidity

Foxray 48F

Total = 560 gallons

$$\text{Total} = 746.7 \text{ acres}$$

SIGNATURES

Project Coordinator: Kodie Rettke

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whittemore
Date: 5/11/01
Aircraft ID: N 652 HA

Location: Raritan Lake
Pilot: Roger Johnnough

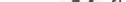
COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Five gallons of local #5 went to finish block 713, which was started on 5/10

Treated a total of 900 acres for the day with these sprays.

All loads Foray 76 B

SIGNATURES

Project Coordinator: 

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman

Date: 5/14/04

Aircraft ID: N122CD

Location: Raystown Lake

Pilot: Brian Redding

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Take-off delayed to 0743 due to GPS problems.

Could have taken off at 0550

could have ~~had~~ 737 acres for the day with this ship

Treated 737 acres for the day with this ship

SIGNATURES

Project Coordinator: Reid Belis

Contractors Representative:

B. F. Heber

DAILY SORTIE REPORT

Project coordinator: Rud Whitman

Date: 5-14-01

Aircraft ID: N652HA

Location: Raystown Lake

Pilot: Roger Johnsonbaugh

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Locds 1-11 Foray 48F

Local 12 New formulation of Bt - provided by Bt producer

Treated 1301 acres with this spray

SIGNATURES

Project Coordinator:

Project Coordinator: Patricia _____

Contractors Representative:

Björn

DAILY SORTIE REPORT

Project coordinator: Rod Whittemore

Date: 5/15/01

Aircraft ID: N12240

Location: Raystown Lake

Pilot: Brian Peching

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Take off delayed due to fog

New formulation of BtC

Treated a total of (6) acres for the day with this ship

Project complete!

SIGNATURES

Project Coordinator:

✓ *John C. Clegg*

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Red Whitman

Date: 5-15-01

Aircraft ID: N6521A

Location: Raystean Lake

Pilot: Roger Johnsen/Boeing

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Take off delayed due to fog

Foray 76 B

13 gallons of lead H2 went into block 724

Treated a total of 336 acres for the day with the ship

SIGNATURES

Project Coordinator: Red Africa

Project complete

Contractors Representative:

P. J.